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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Robertson *et al.*
Serial No.: 09/903,410
Filed: July 10, 2001
Title: ENZYMES HAVING ESTERASE ACTIVITY AND METHODS OF USE
THEREOF

Art Unit: Unassigned
Examiner: Unassigned

Commissioner for Patents
Washington, D.C. 20231

VERIFIED STATEMENT UNDER 37 C.F.R. § 1.821(f)

Sir:

I, Mikhail Bayley, declare that I personally prepared the paper and the computer-readable copies of the Sequence Listing filed herewith in the above-entitled case and that the content of both is the same.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of The United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: 09/24/2001

Mikhail Bayley
Mikhail Bayley

GRAY CARY WARE & FREIDENRICH LLP
4365 Executive Drive, Suite 1600
San Diego, CA 92121-2189

Customer Number: 28213

CERTIFICATION UNDER 37 CFR §1.8	
I hereby certify that the documents referred to as enclosed herein are being deposited with the United States Postal Service as first class mail on this date, <u>Dec 10, 2001</u> , in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231.	
<u>Stephanie Sharrett</u>	
Name of Person Mailing Paper	
<u>Stephanie Sharrett</u>	<u>12/10/01</u>
Signature	Date



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Commissioner for Patents
Washington, D.C. 20231

STATEMENT UNDER 37 C.F.R. §§ 1.821(f) and (g)

Sir:

I hereby state, as required by 37 C.F.R. § 1.821(f), that the information recorded in computer readable form is identical to the written sequence listing.

I hereby state that the submission, filed in accordance with 37 C.F.R. § 1.821 (g), herein does not include new matter.

Respectfully submitted,

Date: 12/10/01

Lisa A. Haile, Ph.D.

Reg. No. 38,347

Telephone: (858) 677-1456

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<u>Stephanie Sharrett</u>	
Name of Person Mailing Paper	
<u>Stephanie Sharrett</u>	
Signature	Date



SEQUENCE LISTING

<100> DIVERSA CORPORATION
ROBERTSON, Dan
MURPHY, Dennis
REID, John
MAFFIA, Anthony
LINK, Steven
SWANSON, Ronald
WARREN, Patrick
KOSMOTKA, Anna

<120> ENZYMES HAVING ESTERASE ACTIVITY AND METHODS OF USE THEREOF

<130> DIVER1180-2

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<141> 2001-07-10

<150> US 09/382,242

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 <213> Thermococcus CL-2-30LC

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35 40 45
Val Lys Ser Ser Val Ala Pro Ile Phe Asn Leu Gly Leu Ala Ile Gly

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Arg Val Lys Gly Ser	Leu Ile Ile Ser Met Gly Val Phe	Leu Asn Leu
85	90	95
Ile Gly Val Phe Asp	Glu Val Tyr Gly Trp Ile His Phe	Leu Val Ser
100	105	110
Val Leu Phe Phe Leu Ser	Ile Ile Ala Tyr Phe Ile Ala Ile Ser Ile	
115	120	125
Leu Asp Lys Ser Trp	Ile Ala Val Leu Leu Ile Ile Gly His Ile Ala	
130	135	140
Met Trp Tyr Leu His	Phe Ala Ser Glu Ile Pro Arg Gly Ala Ala Ile	
145	150	155 160
Pro Glu Leu Leu Ala	Val Phe Ser Phe Leu Pro Phe Tyr Ile Arg Asp	
165	170	175
Tyr Phe Lys Ser Tyr Thr Lys Arg		
180		
<210> 34		
<211> 346		
<212> PRT		
<213> Pyrodictium		
<400> 34		
Met Lys Leu Leu Glu Pro Thr Asn Thr Ser Tyr Thr Leu Leu Gln Asp		
1	5	10 15
Leu Ala Leu His Phe Ala Phe Tyr Trp Phe Leu Ala Val Tyr Thr Trp		
20	25	30
Leu Pro Gly Val Leu Val Arg Gly Val Ala Val Asp Thr Gly Val Ala		
35	40	45
Arg Val Pro Gly Leu Gly Arg Arg Gly Lys Arg Leu Leu Leu Ala Ala		
50	55	60
Val Ala Val Leu Ala Leu Val Val Ser Val Val Val Pro Ala Tyr Val		
65	70	75 80
Ala Tyr Ser Ser Leu His Pro Glu Ser Cys Arg Pro Val Ala Pro Glu		
85	90	95
Gly Leu Thr Tyr Lys Glu Phe Ser Val Thr Ala Glu Asp Gly Leu Val		
100	105	110
Val Arg Gly Trp Val Leu Gly Pro Gly Ala Gly Gly Asn Pro Val Phe		
115	120	125
Val Leu Met His Gly Tyr Thr Gly Cys Arg Ser Ala Pro Tyr Met Ala		
130	135	140
Val Leu Ala Arg Glu Leu Val Glu Trp Gly Tyr Pro Val Val Val Phe		

145						150						155						160
Asp	Phe	Arg	Gly	His	Gly	Glu	Ser	Gly	Gly	Ser	Thr	Thr	Ile	Gly	Pro			
				165					170					175				
Arg	Glu	Val	Leu	Asp	Ala	Arg	Ala	Val	Val	Gly	Tyr	Val	Ser	Glu	Arg			
				180					185					190				
Phe	Pro	Gly	Arg	Arg	Ile	Ile	Leu	Val	Gly	Phe	Ser	Met	Gly	Gly	Ala			
				195					200					205				
Val	Ala	Ile	Val	Glu	Gly	Ala	Gly	Asp	Pro	Arg	Val	Tyr	Ala	Val	Ala			
				210					215					220				
Ala	Asp	Ser	Pro	Tyr	Tyr	Arg	Leu	Arg	Asp	Val	Ile	Pro	Arg	Trp	Leu			
225					230					235					240			
Glu	Tyr	Lys	Thr	Pro	Leu	Pro	Gly	Trp	Val	Gly	Val	Leu	Ala	Gly	Phe			
				245					250					255				
Tyr	Gly	Arg	Leu	Met	Ala	Gly	Val	Asp	Leu	Gly	Phe	Gly	Pro	Ala	Gly			
				260					265					270				
Val	Glu	Arg	Val	Asp	Lys	Pro	Leu	Leu	Val	Val	Tyr	Gly	Pro	Arg	Asp			
				275					280					285				
Pro	Leu	Val	Thr	Arg	Asp	Glu	Ala	Arg	Ser	Leu	Ala	Ser	Arg	Ser	Pro			
				290					295					300				
Cys	Gly	Arg	Leu	Val	Glu	Val	Pro	Gly	Ala	Gly	His	Val	Glu	Ala	Val			
305					310					315					320			
Asp	Val	Leu	Gly	Pro	Gly	Arg	Tyr	Ala	Asp	Met	Leu	Ile	Glu	Leu	Ala			
				325					330					335				
His	Glu	Glu	Cys	Pro	Pro	Gly	Ala	Gly	Gly									
				340					345									

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<210> 35
<211> 262
<212> PRT
<213> Archaeoglobus Veneficus
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<400> 35

Met	Pro	Tyr	Val	Arg	Asn	Gly	Gly	Val	Asn	Ile	Tyr	Tyr	Glu	Leu	Val
1				5					10					15	
Asp	Gly	Pro	Glu	Pro	Pro	Ile	Val	Phe	Val	His	Gly	Trp	Thr	Ala	Asn
			20					25					30		
Met	Asn	Phe	Trp	Lys	Glu	Gln	Arg	Arg	Tyr	Phe	Ala	Gly	Arg	Asn	Met
		35					40					45			
Met	Leu	Phe	Val	Asp	Asn	Arg	Gly	His	Gly	Arg	Ser	Asp	Lys	Pro	Leu
	50					55					60				
Gly	Tyr	Asp	Phe	Tyr	Arg	Phe	Glu	Asn	Phe	Ile	Ser	Asp	Leu	Asp	Ala
65					70					75					80
Val	Val	Arg	Glu	Thr	Gly	Val	Glu	Lys	Phe	Val	Leu	Val	Gly	His	Ser

85					90					95					
Phe	Gly	Thr	Met	Ile	Ser	Met	Lys	Tyr	Cys	Ser	Glu	Tyr	Arg	Asn	Arg
			100					105					110		
Val	Leu	Ala	Leu	Ile	Leu	Ile	Gly	Gly	Gly	Ser	Arg	Ile	Lys	Leu	Leu
		115					120					125			
His	Arg	Ile	Gly	Tyr	Pro	Leu	Ala	Lys	Ile	Leu	Ala	Ser	Ile	Ala	Tyr
	130					135					140				
Lys	Lys	Ser	Ser	Arg	Leu	Val	Ala	Asp	Leu	Ser	Phe	Gly	Lys	Asn	Ala
145					150					155					160
Gly	Glu	Leu	Lys	Glu	Trp	Gly	Trp	Lys	Gln	Ala	Met	Asp	Tyr	Thr	Pro
			165					170						175	
Ser	Tyr	Val	Ala	Met	Tyr	Thr	Tyr	Arg	Thr	Leu	Thr	Lys	Val	Asn	Leu
		180						185					190		
Glu	Asn	Ile	Leu	Glu	Lys	Ile	Asp	Cys	Pro	Thr	Leu	Ile	Ile	Val	Gly
	195						200					205			
Glu	Glu	Asp	Ala	Leu	Leu	Pro	Val	Ser	Lys	Ser	Val	Glu	Leu	Ser	Arg
	210					215					220				
Arg	Ile	Glu	Asn	Ser	Lys	Leu	Val	Ile	Ile	Pro	Asn	Ser	Gly	His	Cys
225					230					235					240
Val	Met	Leu	Glu	Ser	Pro	Ser	Glu	Val	Asn	Arg	Ala	Met	Asp	Glu	Phe
			245					250						255	
Ile	Ser	Ser	Ala	Gln	Phe										
			260												
<210> 36															
<211> 251															
<212> PRT															
<213> Aquifex pyrophilus															
<400> 36															
Leu	Arg	Leu	Arg	Lys	Phe	Glu	Glu	Ile	Asn	Leu	Val	Leu	Ser	Gly	Gly
1				5					10					15	
Ala	Ala	Lys	Gly	Ile	Ala	His	Ile	Gly	Val	Leu	Lys	Ala	Ile	Asn	Glu
		20						25					30		
Leu	Gly	Ile	Arg	Val	Arg	Ala	Leu	Ser	Gly	Val	Ser	Ala	Gly	Ala	Ile
	35						40					45			
Val	Ser	Val	Phe	Tyr	Ala	Ser	Gly	Tyr	Ser	Pro	Glu	Gly	Met	Phe	Ser
	50					55					60				
Leu	Leu	Lys	Arg	Val	Asn	Trp	Leu	Lys	Leu	Phe	Lys	Phe	Lys	Pro	Pro
65					70				75					80	
Leu	Lys	Gly	Leu	Ile	Gly	Trp	Glu	Lys	Ala	Ile	Arg	Phe	Leu	Glu	Glu
			85					90						95	
Val	Leu	Pro	Tyr	Arg	Arg	Ile	Glu	Lys	Leu	Glu	Ile	Pro	Thr	Tyr	Ile

100					105					110							
Cys	Ala	Thr	Asp	Leu	Tyr	Ser	Gly	Arg	Ala	Leu	Tyr	Leu	Ser	Glu	Gly		
115					120					125							
Ser	Leu	Ile	Pro	Ala	Leu	Leu	Gly	Ser	Cys	Ala	Ile	Pro	Gly	Ile	Phe		
130					135					140							
Glu	Pro	Val	Glu	Tyr	Lys	Asn	Tyr	Leu	Leu	Val	Asp	Gly	Gly	Ile	Val		
145					150					155					160		
Asn	Asn	Leu	Pro	Val	Glu	Pro	Phe	Gln	Glu	Ser	Gly	Ile	Pro	Thr	Val		
165					170					175							
Cys	Val	Asp	Val	Leu	Pro	Ile	Glu	Pro	Glu	Lys	Asp	Ile	Lys	Asn	Ile		
180					185					190							
Leu	His	Ile	Leu	Leu	Arg	Ser	Phe	Phe	Leu	Ala	Val	Arg	Ser	Asn	Ser		
195					200					205							
Glu	Lys	Arg	Lys	Glu	Phe	Cys	Asp	Leu	Val	Ile	Val	Pro	Glu	Leu	Glu		
210					215					220							
Glu	Phe	Thr	Pro	Leu	Asp	Val	Arg	Lys	Ala	Asp	Gln	Ile	Met	Glu	Arg		
225					230					235					240		
Gly	Tyr	Ile	Lys	Ala	Leu	Glu	Val	Leu	Ser	Glu							
245					250												

<210> 37
 <211> 297
 <212> PRT
 <213> M11TL-29L

<400> 37

Met	Phe	Asn	Ile	Asn	Val	Phe	Val	Asn	Ile	Ser	Trp	Leu	Tyr	Phe	Ser
1				5					10					15	
Gly	Ile	Val	Met	Lys	Thr	Val	Glu	Glu	Tyr	Ala	Leu	Leu	Glu	Thr	Gly
			20					25					30		
Val	Arg	Val	Phe	Tyr	Arg	Cys	Val	Ile	Pro	Glu	Lys	Ala	Phe	Asn	Thr
		35					40					45			
Leu	Ile	Ile	Gly	Ser	His	Gly	Leu	Gly	Ala	His	Ser	Gly	Ile	Tyr	Ile
	50					55					60				
Ser	Val	Ala	Glu	Glu	Phe	Ala	Arg	His	Gly	Phe	Gly	Phe	Cys	Met	His
65					70				75					80	
Asp	Gln	Arg	Gly	His	Gly	Arg	Thr	Ala	Ser	Asp	Arg	Glu	Arg	Gly	Tyr
				85					90					95	
Val	Glu	Gly	Phe	His	Asn	Phe	Ile	Glu	Asp	Met	Lys	Ala	Phe	Ser	Asp
			100					105					110		
Tyr	Ala	Lys	Trp	Arg	Val	Gly	Gly	Asp	Glu	Ile	Ile	Leu	Leu	Gly	His
		115					120					125			
Ser	Met	Gly	Gly	Leu	Ile	Ala	Leu	Leu	Thr	Val	Ala	Thr	Tyr	Lys	Glu

130 135 140
 Ile Ala Lys Gly Val Ile Ala Leu Ala Pro Ala Leu Gln Ile Pro Leu
 145 150 155 160
 Thr Pro Ala Arg Arg Leu Val Leu Ser Leu Ala Ser Arg Leu Ala Pro
 165 170 175
 His Ser Lys Ile Thr Leu Gln Arg Arg Leu Pro Gln Lys Pro Glu Gly
 180 185 190
 Phe Gln Arg Ala Lys Asp Ile Glu Tyr Ser Leu Ser Glu Ile Ser Val
 195 200 205
 Lys Leu Val Asp Glu Met Ile Lys Ala Ser Ser Met Phe Trp Thr Ile
 210 215 220
 Ala Gly Glu Ile Asn Thr Pro Val Leu Leu Ile His Gly Glu Lys Asp
 225 230 235 240
 Asn Val Ile Pro Pro Glu Ala Ser Lys Lys Ala Tyr Gln Leu Ile Pro
 245 250 255
 Ser Phe Pro Lys Glu Leu Lys Ile Tyr Pro Asp Leu Gly His Asn Leu
 260 265 270
 Phe Phe Glu Pro Gly Ala Val Lys Ile Val Thr Asp Ile Val Glu Trp
 275 280 285
 Val Lys Asn Leu Pro Arg Glu Asn Pro
 290 295

 <210> 38
 <211> 262
 <212> PRT
 <213> Thermococcus CL-2-30LC

 <400> 38
 Met Glu Val Tyr Lys Ala Lys Phe Gly Glu Ala Lys Leu Gly Trp Val
 1 5 10 15
 Val Leu Val His Gly Leu Gly Glu His Ser Gly Arg Tyr Gly Arg Leu
 20 25 30
 Ile Lys Glu Leu Asn Tyr Ala Gly Phe Gly Val Tyr Thr Phe Asp Trp
 35 40 45
 Pro Gly His Gly Lys Ser Pro Gly Lys Arg Gly His Thr Ser Val Glu
 50 55 60
 Glu Ala Met Glu Ile Ile Asp Ser Ile Ile Glu Glu Ile Arg Glu Lys
 65 70 75 80
 Pro Phe Leu Phe Gly His Ser Leu Gly Gly Leu Thr Val Ile Arg Tyr
 85 90 95
 Ala Glu Thr Arg Pro Asp Lys Ile Arg Gly Leu Ile Ala Ser Ser Pro
 100 105 110
 Ala Leu Ala Lys Ser Pro Glu Thr Pro Gly Phe Met Val Ala Leu Ala

115 120 125
 Lys Phe Leu Gly Lys Ile Ala Pro Gly Val Val Leu Ser Asn Gly Ile
 130 135 140
 Lys Pro Glu Leu Leu Ser Arg Asn Arg Asp Ala Val Arg Arg Tyr Val
 145 150 155 160
 Glu Asp Pro Leu Val His Asp Arg Ile Ser Ala Lys Leu Gly Arg Ser
 165 170 175
 Ile Phe Val Asn Met Glu Leu Ala His Arg Glu Ala Asp Lys Ile Lys
 180 185 190
 Val Pro Ile Leu Leu Leu Ile Gly Thr Gly Asp Val Ile Thr Pro Pro
 195 200 205
 Glu Gly Ser Arg Arg Leu Phe Glu Glu Leu Ala Val Glu Asn Lys Thr
 210 215 220
 Leu Arg Glu Phe Glu Gly Ala Tyr His Glu Ile Phe Glu Asp Pro Glu
 225 230 235 240
 Trp Ala Glu Glu Phe His Glu Thr Ile Val Lys Trp Leu Val Glu Lys
 245 250 255
 Ser Tyr Ser Ser Ala Gln
 260

<210> 39
 <211> 249
 <212> PRT
 <213> Aquifex VF5-34LC

<400> 39

Leu Ile Gly Asn Leu Lys Leu Lys Arg Phe Glu Glu Val Asn Leu Val
 1 5 10 15
 Leu Ser Gly Gly Ala Ala Lys Gly Ile Ala His Ile Gly Val Leu Lys
 20 25 30
 Ala Leu Glu Glu Leu Gly Ile Lys Val Lys Arg Leu Ser Gly Val Ser
 35 40 45
 Ala Gly Ala Ile Val Ser Val Phe Tyr Ala Ser Gly Tyr Thr Pro Asp
 50 55 60
 Glu Met Leu Lys Leu Leu Lys Glu Val Asn Trp Leu Lys Leu Phe Lys
 65 70 75 80
 Phe Lys Thr Pro Lys Met Gly Leu Met Gly Trp Glu Lys Ala Ala Glu
 85 90 95
 Phe Leu Glu Lys Glu Leu Gly Val Lys Arg Leu Glu Asp Leu Asn Ile
 100 105 110
 Pro Thr Tyr Leu Cys Ser Ala Asp Leu Tyr Thr Gly Lys Ala Leu Tyr
 115 120 125
 Phe Gly Arg Gly Asp Leu Ile Pro Val Leu Leu Gly Ser Cys Ser Ile

130		135		140	
Pro Gly Ile Phe Glu	Pro Val Glu Tyr Glu	Asn Phe Leu Leu Val	Asp		
145	150	155	160		
Gly Gly Ile Val Asn	Asn Leu Pro Val Glu	Pro Leu Glu Lys Phe	Lys		
	165	170	175		
Glu Pro Ile Ile Gly	Val Asp Val Leu	Pro Ile Thr Gln	Glu Arg Lys		
	180	185	190		
Ile Lys Asn Ile Leu	His Ile Leu Ile	Arg Ser Phe Phe	Leu Ala Val		
	195	200	205		
Arg Ser Asn Ser Glu	Lys Arg Lys Glu	Phe Cys Asn Val	Val Ile Glu		
	210	215	220		
Pro Pro Leu Glu Glu	Phe Ser Pro Leu	Asp Val Asn Lys	Ala Asp Glu		
	225	230	235	240	
Ile Phe Cys Gly Asp	Met Arg Ala Leu				
	245				

<210> 40
 <211> 338
 <212> PRT
 <213> Teredinibacter - 42

<400> 40

Met Pro Ala Asn Asp	Ser Pro Thr Ile	Asp Phe Asn Pro	Arg Gly Ile
1	5	10	15
Leu Arg Asn Ala His	Ala Gln Val Ile	Leu Ala Thr Ser	Gly Leu Arg
	20	25	30
Lys Ala Phe Leu Lys	Arg Thr His Lys	Ser Tyr Leu Ser	Thr Ala Gln
	35	40	45
Trp Leu Glu Leu Asp	Ala Gly Asn Gly	Val Thr Leu Ala	Gly Glu Leu
	50	55	60
Asn Thr Ala Pro Ala	Thr Ala Ser Ser	Ser His Pro Ala	His Lys Asn
	65	70	75
Thr Leu Val Ile Val	Leu His Gly Trp	Glu Gly Ser Ser	Gln Ser Ala
	85	90	95
Tyr Ala Thr Ser Ala	Gly Ser Thr Leu	Phe Asp Asn Gly	Phe Asp Thr
	100	105	110
Phe Arg Leu Asn Phe	Arg Asp His Gly	Asp Thr Tyr His	Leu Asn Arg
	115	120	125
Gly Ile Phe Asn Ser	Ser Leu Ile Asp	Glu Val Val Gly	Ala Val Lys
	130	135	140
Ala Ile Gln Gln Gln	Thr Asp Tyr Asp	Lys Tyr Cys Leu	Met Gly Phe
	145	150	155
Ser Leu Gly Gly Asn	Phe Ala Leu Arg	Val Ala Val Arg	Glu Gln His

165								170				175			
Leu	Ala	Lys	Pro	Leu	Ala	Gly	Val	Leu	Ala	Val	Cys	Pro	Val	Leu	Asp
			180								185				190
Pro	Ala	His	Thr	Met	Met	Ala	Leu	Asn	Arg	Gly	Ala	Phe	Phe	Tyr	Gly
		195					200					205			
Arg	Tyr	Phe	Ala	His	Lys	Trp	Lys	Arg	Ser	Leu	Thr	Ala	Lys	Leu	Ala
	210					215					220				
Ala	Phe	Pro	Asp	Tyr	Lys	Tyr	Gly	Lys	Asp	Leu	Lys	Ser	Ile	His	Thr
225					230					235					240
Leu	Asp	Glu	Leu	Asn	Asn	Tyr	Phe	Ile	Pro	Arg	Tyr	Thr	Gly	Phe	Asn
				245				250						255	
Ser	Val	Ser	Glu	Tyr	Phe	Lys	Ser	Tyr	Thr	Leu	Thr	Gly	Gln	Lys	Leu
			260				265						270		
Ala	Phe	Leu	Asn	Cys	Pro	Ser	Tyr	Ile	Leu	Ala	Ala	Gly	Asp	Asp	Pro
		275					280					285			
Ile	Ile	Pro	Ala	Ser	Asp	Phe	Gln	Lys	Ile	Ala	Lys	Pro	Ala	Asn	Leu
	290					295					300				
His	Ile	Thr	Val	Thr	Gln	Gln	Gly	Ser	His	Cys	Ala	Tyr	Leu	Glu	Asn
305					310					315					320
Leu	His	Lys	Pro	Ser	Ala	Ala	Asp	Lys	Tyr	Ala	Val	Lys	Leu	Phe	Gly
				325				330						335	

Ala Cys

<210> 41
 <211> 311
 <212> PRT
 <213> Archaeoglobus fulgidus

<400> 41

Met	Leu	Asp	Met	Pro	Ile	Asp	Pro	Val	Tyr	Tyr	Gln	Leu	Ala	Glu	Tyr
1				5				10						15	
Phe	Asp	Ser	Leu	Pro	Lys	Phe	Asp	Gln	Phe	Ser	Ser	Ala	Arg	Glu	Tyr
			20					25					30		
Arg	Glu	Ala	Ile	Asn	Arg	Ile	Tyr	Glu	Glu	Arg	Asn	Arg	Gln	Leu	Ser
		35					40					45			
Gln	His	Glu	Arg	Val	Glu	Arg	Val	Glu	Asp	Arg	Thr	Ile	Lys	Gly	Arg
	50					55				60					
Asn	Gly	Asp	Ile	Arg	Val	Arg	Val	Tyr	Gln	Gln	Lys	Pro	Asp	Ser	Pro
65					70					75					80
Val	Leu	Val	Tyr	Tyr	His	Gly	Gly	Gly	Phe	Val	Ile	Cys	Ser	Ile	Glu
			85					90						95	
Ser	His	Asp	Ala	Leu	Cys	Arg	Arg	Ile	Ala	Arg	Leu	Ser	Asn	Ser	Thr

100					105					110					
Val	Val	Ser	Val	Asp	Tyr	Arg	Leu	Ala	Pro	Glu	His	Lys	Phe	Pro	Ala
		115					120					125			
Ala	Val	Tyr	Asp	Cys	Tyr	Asp	Ala	Thr	Lys	Trp	Val	Ala	Glu	Asn	Ala
	130					135					140				
Glu	Glu	Leu	Arg	Ile	Asp	Pro	Ser	Lys	Ile	Phe	Val	Gly	Gly	Asp	Ser
145					150					155					160
Ala	Gly	Gly	Asn	Leu	Ala	Ala	Ala	Val	Ser	Ile	Met	Ala	Arg	Asp	Ser
			165						170					175	
Gly	Glu	Asp	Phe	Ile	Lys	His	Gln	Ile	Leu	Ile	Tyr	Pro	Val	Val	Asn
		180						185					190		
Phe	Val	Ala	Pro	Thr	Pro	Ser	Leu	Leu	Glu	Phe	Gly	Glu	Gly	Leu	Trp
	195						200					205			
Ile	Leu	Asp	Gln	Lys	Ile	Met	Ser	Trp	Phe	Ser	Glu	Gln	Tyr	Phe	Ser
	210					215					220				
Arg	Glu	Glu	Asp	Lys	Phe	Asn	Pro	Leu	Ala	Ser	Val	Ile	Phe	Ala	Asp
225					230					235					240
Leu	Glu	Asn	Leu	Pro	Pro	Ala	Leu	Ile	Ile	Thr	Ala	Glu	Tyr	Asp	Pro
			245					250						255	
Leu	Arg	Asp	Glu	Gly	Glu	Val	Phe	Gly	Gln	Met	Leu	Arg	Arg	Ala	Gly
		260						265					270		
Val	Glu	Ala	Ser	Ile	Val	Arg	Tyr	Arg	Gly	Val	Leu	His	Gly	Phe	Ile
		275					280					285			
Asn	Tyr	Tyr	Pro	Val	Leu	Lys	Ala	Ala	Arg	Asp	Ala	Ile	Asn	Gln	Ile
	290					295					300				
Ala	Ala	Leu	Leu	Val	Phe	Asp									
305					310										

<210> 42
 <211> 305
 <212> PRT
 <213> Sulfolobus solfataricus

<400> 42

Met	Pro	Leu	Asp	Pro	Arg	Ile	Lys	Lys	Leu	Leu	Glu	Ser	Ala	Leu	Thr
1				5					10					15	
Ile	Pro	Ile	Gly	Lys	Ala	Pro	Val	Glu	Glu	Val	Arg	Lys	Ile	Phe	Arg
		20						25					30		
Gln	Leu	Ala	Ser	Ala	Ala	Pro	Lys	Val	Glu	Val	Gly	Lys	Val	Glu	Asp
	35						40					45			
Ile	Lys	Ile	Pro	Gly	Ser	Glu	Thr	Val	Ile	Asn	Ala	Arg	Val	Tyr	Phe
	50					55					60				
Pro	Lys	Ser	Ser	Gly	Pro	Tyr	Gly	Val	Leu	Val	Tyr	Leu	His	Gly	Gly

65		70		75		80
Gly Phe Val Ile	Gly Asp Val Glu Ser Tyr Asp Pro Leu Cys Arg Ala					
	85		90			95
Ile Thr Asn Ala Cys Asn Cys Val Val Val Ser Val Asp Tyr Arg Leu						
	100		105			110
Ala Pro Glu Tyr Lys Phe Pro Ser Ala Val Ile Asp Ser Phe Asp Ala						
	115		120			125
Thr Asn Trp Val Tyr Asn Asn Leu Asp Lys Phe Asp Gly Lys Met Gly						
	130		135			140
Val Ala Ile Ala Gly Asp Ser Ala Gly Gly Asn Leu Ala Ala Val Val						
	145		150			155
						160
Ala Leu Leu Ser Lys Gly Lys Ile Asn Leu Lys Tyr Gln Ile Leu Val						
			165			170
						175
Tyr Pro Ala Val Ser Leu Asp Asn Val Ser Arg Ser Met Ile Glu Tyr						
			180			185
						190
Ser Asp Gly Phe Phe Leu Thr Arg Glu His Ile Glu Trp Phe Gly Ser						
			195			200
						205
Gln Tyr Leu Arg Ser Pro Ala Asp Leu Leu Asp Phe Arg Phe Ser Pro						
			210			215
						220
Ile Leu Ala Gln Asp Phe Asn Gly Leu Pro Pro Ala Leu Ile Ile Thr						
			225			230
						235
Ala Glu Tyr Asp Pro Leu Arg Asp Gln Gly Glu Ala Tyr Ala Asn Lys						
			245			250
						255
Leu Leu Gln Ala Gly Val Ser Val Thr Ser Val Arg Phe Asn Asn Val						
			260			265
						270
Ile His Gly Phe Leu Ser Phe Phe Pro Leu Met Glu Gln Gly Arg Asp						
			275			280
						285
Ala Ile Gly Leu Ile Gly Ser Val Leu Arg Arg Val Phe Tyr Asp Lys						
			290			295
						300
Ile						
305						